2013 Maryland FMP Report (July 2014)
Section 4. Atlantic Menhaden (*Brevoortia tyrannus*)

Beginning in 2013, a new coastwide commercial harvest quota was implemented for Atlantic menhaden to reduce exploitation by 20%. The coastwide quota was 170,800 MT or 377 million pounds and was based on the average harvest from 2009 through 2011. Results of the most recent stock assessment update indicate overfishing is occurring on the coastal menhaden stock. It is unknown whether or not the stock is overfished. Maryland's main management priority for menhaden during 2013 was to manage the new commercial quota by obtaining more timely harvest data and implementing regulations to close the fishery when the quota was met.

ASMFC Fishery Management

A coastal Atlantic menhaden fishery management plan (FMP) was developed by the Atlantic States Marine Fisheries Commission (ASMFC) in 1981. The plan was revised in 1992, amended in 2001 (Amendment 1) and currently managed under Amendment 2 (2012) and several addendums (2004, 2005, 2006, 2009 2011, 2013). The coastal stock assessment was updated and revised in 2010. New biological reference points were developed and adopted in ASMFC Addendum V (2011). The goal of Addendum V is to increase abundance, to increase spawning stock biomass, and to increase menhaden availability as forage. The 2011 threshold and target for biomass are based on a maximum spawning potential (MSP) of 15% and 30%, respectively. The goal of ASMFC Amendment 2 is to reduce fishing mortality and to end overfishing. The amendment also seeks to reduce the risk of recruitment failure, to reduce the impacts to other species that are dependent on menhaden as prey, and to minimize adverse effects on the fishery. For more detailed information on Amendment 2, refer to the ASMFC website http://www.asmfc.org/. In 2013, Technical Addendum 1 to Amendment 2 was adopted. It allows 1% of the total allowable catch to be set aside for episodic events. These types of events are defined as times and areas when/where menhaden are available in greater abundance than usual. These events typically take place along the New England coast. ASMFC continues to place a high priority on developing ecosystem-based reference points to address the forage needs of predator species. Menhaden are important prey for striped bass, weakfish and bluefish. The development of ecosystem reference points are expected to take several years.

There is no Chesapeake Bay fishery management plan (FMP) for Atlantic menhaden. Menhaden was one of the species slated for the development of an ecosystem-based fishery management plan (EBFMP). Maryland Sea Grant facilitated the EBFM process and developed biological briefs on key ecosystem topics for menhaden in Chesapeake Bay. More information on the EBFM process and the completed menhaden briefs can be found at the following website: http://www.mdsg.umd.edu/programs/policy/ebfm.

Stock Status

Biological reference points (BRPs) were established in ASMFC Amendment 1 and updated in 2004. A benchmark assessment was conducted during 2009, peer reviewed, and released in 2010. The assessment included two new components: a factor for aging error and natural mortality rates that varied with age and time. The assessment was updated in 2012 with data from 2009 through 2011. The results indicate that fishing mortality rates have been above the overfishing reference point. As a result, overfishing is still occurring. Results of the 2012 update were inconclusive to determine if the stock is overfished. The 2010 BRPs are considered interim benchmarks until the next coastal assessment is completed during 2014. The BRPs are expected to protect the spawning stock and to take into account the needs of top predators.

Coastal recruitment indices have been generally low since the 1980s. In Maryland, juvenile menhaden are sampled annually through the Estuarine Juvenile Finfish Survey. The index of juvenile menhaden has been low since 1992 (Figure 1). The development of new management actions and reduced harvest should contribute to improving recruitment.

Management Measures

The coastal overfishing designation resulted in management measures to reduce harvest by 20%. Based on the 2010 BRPs, a total allowable catch (TAC) of 170,800 mt (376,549,574 lbs) was calculated for the Atlantic states for 2013. The coastal TAC was allocated state by state based on average state landings (2009-2011). Maryland's quota was 1.37% of the TAC or 2,320 mt (5,185,729 lbs). The Potomac River and Virginia portion of the TAC was 0.62% and 85.32%, respectively. Since Maryland did not have any regulations for menhaden other than a prohibition on purse seining, new regulations were required to implement the ASMFC management measures. Maryland submitted emergency regulations, effective June 1, 2013, to address the quota, catch limits, bycatch, permitting and monitoring requirements. For specific information on the new regulations go to http://dnr.maryland.gov/fisheries/regulations/proposedregulations.asp

The coastwide commercial menhaden fishery is composed of two different components: the reduction fishery (fish caught by purse seines and processed for fish oil/fish meal) and the bait fishery (fish for other commercial and recreational fisheries such as the blue crab fishery). Purse seining, the predominant gear type for harvesting menhaden, is not allowed in the Maryland portion of the Chesapeake Bay. However, menhaden are harvested from pound nets for the bait fishery. Virginia allows purse seining in the lower bay. Omega Protein has a menhaden reduction plant in Reedville, Virginia, which is the only active menhaden reduction factory on the Atlantic coast. ASMFC Addendum II (2006) established a harvest cap (109,020 mt) for the reduction fishery in Chesapeake Bay. With the adoption of ASMFC Amendment 2, there was a 20% reduction in the harvest cap based on average landings from 2001-2005. The new harvest cap for the Chesapeake Bay reduction fishery is 87,216 mt (192,278,382 lbs). The cap is not based on a scientifically quantified method but is designed to prevent all of the reduction fishery from occurring in the Bay.

The Fishery

The Maryland open menhaden fishery began in January and was closed at the end of June when new regulations became effective. Maryland commercial fishermen harvested 7,071,038 lbs of menhaden in 2013 (includes the open fishery and bycatch). Since bycatch is not considered part of the quota, Maryland was under the allotted quota with a total harvest of 4,211,660 lbs. The remainder of the total harvest, 2,859,378 lbs was caught as bycatch after the fishery was closed in June (landings data as of May 2014). After the fishery was closed there was a 6000 lb allowance per license per day. Watermen are required to report their menhaden bycatch on a daily basis. As a result of the new management measures, the 2013 harvest was most likely reduced between 27% and 34% (Rickabaugh 2014).

Biological monitoring from the Maryland pound net (bait) fishery indicated that the majority of harvested menhaden were age 1 through age 3 fish (80%). Menhaden ages 1 through 7 were

present in the samples. Maryland DNR will continue to collect biological data on fish sampled from commercial pound nets.

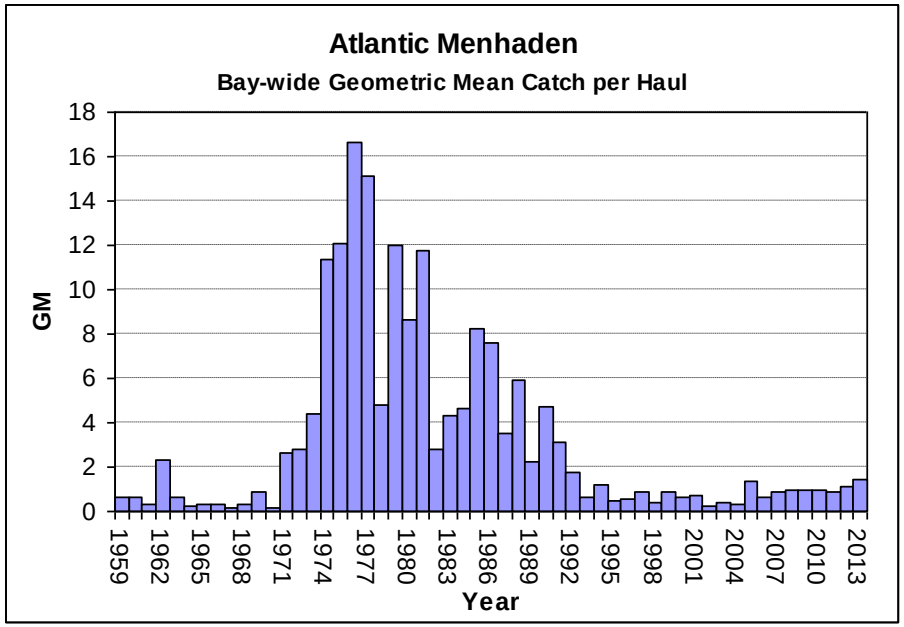
Issues/Concerns

Significant changes in management were put in place on June 29, 2013 to meet the state-specific quotas set forth by ASMFC compliance requirements. The commercial fishery will continue to be managed under a quota during 2014. All watermen harvesting menhaden from pound nets are required to obtain a bycatch permit to report their catch on a daily basis. Part of the quota will be set aside as a buffer for non-pound net landings. Once the fishery is closed a bycatch limit of 6,000 lbs per day will be allowed for permit holders. Non-permit holders will be restricted to a 1,500 lb. bycatch limit.

Menhaden have a unique role in the Chesapeake Bay ecosystem as both a primary filter-feeder and an important forage species for top predators (striped bass, bluefish, osprey, etc). The development of ecosystem-based biological reference points would be useful for managing the stock. Menhaden support a major commercial fishery and are the Bay's largest fishery by weight. Consequently, they are an economically important species.

Two ways to improve the menhaden stock assessments (and recommended by ASMFC) are the development of a coastwide fishery-independent survey to assess adult abundance at age and better estimates of natural mortality by age class. Results of the 2014 benchmark coastal stock assessment should provide more clarity on the status of the stock.

Figure 1. Geometric mean catch per haul of menhaden juveniles in the Maryland portion of the Chesapeake Bay, 1959-2013



(from Durell et al. 2013)

Figure 2. Atlantic Menhaden Bait Landings from Maryland, 1981-2013

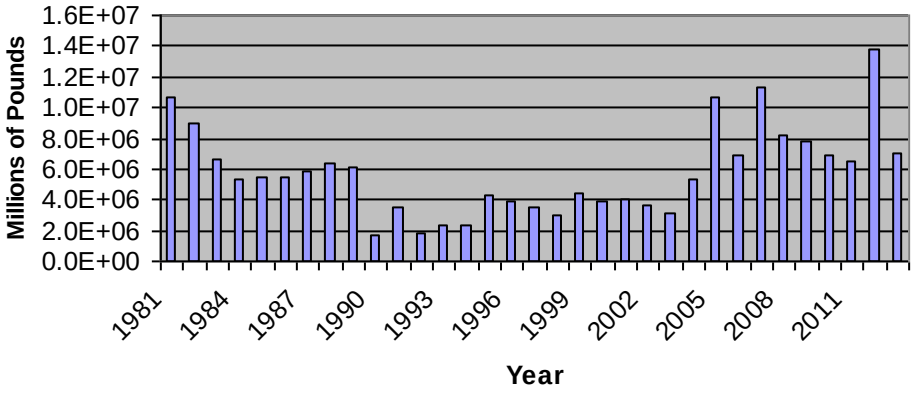
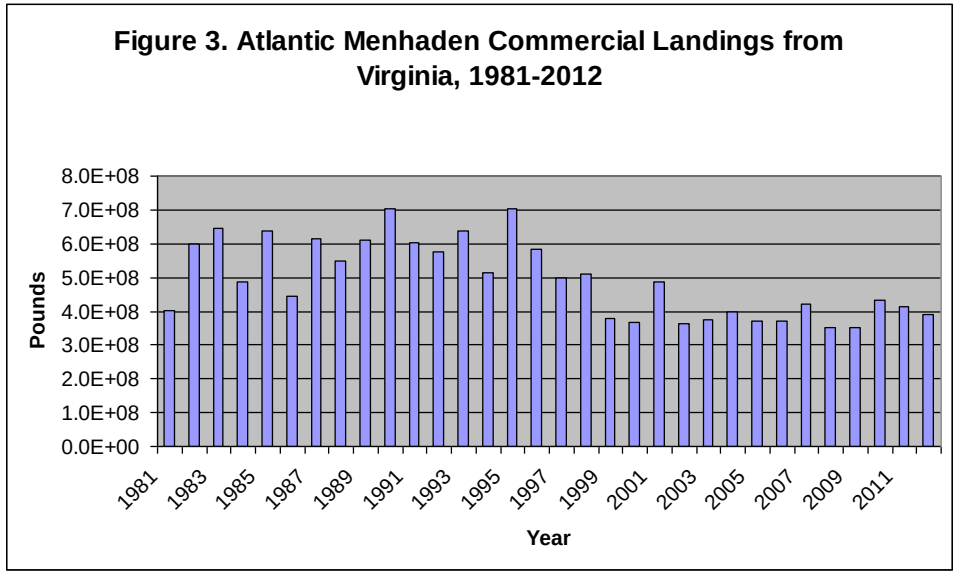


Figure 3. Atlantic Menhaden Commercial Landings from Virginia, 1981-2012



Rickabaugh, H.W. 2014. Maryland Atlantic Menhaden (Brevoortia tyrannus) Compliance Report to the Atlantic State Marine Fisheries Commission - 2013